CLEAN VERSION
CLAIMS

1. (once amended) A magnetometer comprising:
an electrically conducting string, the string receiving a current; and
means for supporting the string in tension at two locations, the string being capable of vibrating in any direction orthogonal to its axis;
the magnetometer being placed in a magnetic field to be detected, the magnetic field being perpendicular to the direction of the current and producing a Lorentz Force perpendicular to the string, the Lorentz Force causing deflection in the string along multiple axes that can be detected.

3. (once amended) The magnetometer of claim 2, further comprising a light source for inserting light into the fiber, wherein the fiber is light conducting.

4. (once amended) The magnetometer as recited in claim 1, further comprising a means for varying the tension of the string.

6. (once amended) The magnetometer as recited in claim 1, further comprising a silicon substrate containing a plurality of strings of varying lengths, the current being switchable between the strings to change the resonant frequency.

10. (once amended) The magnetometer array as recited in claim 7, further comprising a silicon substrate containing a plurality of strings or fibers of varying lengths, the current being switchable between the strings or fibers to change the resonant frequency.

11. (once amended) The magnetometer of claim 3, further comprising means for detecting the deflection in the fiber.

12. (once amended) The magnetometer as recited in claim 11, the means for detecting comprising:
a first aperture in the conducting material on the fiber; and
a detector for detecting light escaping through the aperture.

18. (once amended) The magnetometer as recited in claim 12, further comprising a second aperture in the conducting material on the fiber, the second aperture being orthogonal to the first aperture for simultaneous measurement of two orthogonal vector components of the motion of the fiber and, hence, two magnetic field components.

19. (once amended) A method for detecting multiple vector magnetic fields comprising the steps of:
supporting an electrically conducting string in tension at two locations, the string being capable of vibrating in any direction orthogonal to its axis;
inserting a current at one end of the string and extracting it at the other end;
placing the string in a magnetic field perpendicular to the direction of the current in the string, thereby producing a Lorentz Force perpendicular to the string, the Lorentz Force causing deflection in the string; and
detecting the deflection in the string along multiple axes.

22. (once amended) A method for detecting multiple vector magnetic fields comprising the steps of:
supporting a light conducting fiber coated with an electrically conducting material in tension at two locations, the fiber being capable of vibrating in any direction orthogonal to its axis;
inserting a current and light at one end of the fiber and extracting the current and light at the other end;
placing the fiber in a magnetic field perpendicular to the direction of the current in the fiber, thereby producing a Lorentz Force perpendicular to the fiber, the

Lorentz Force causing deflection in the fiber; and

detecting the deflection in the fiber along multiple axes.

24. (once amended) The method as recited in claim 23, further comprising the steps of:

forming an aperture in the conducting material on the fiber; and

detecting the light escaping through the aperture.

25. (once amended) A magnetometer comprising:

a mechanical means for resonating other than a bar, the resonating means receiving a current;

means for supporting the resonating means; and

means for varying the tension of the resonating means;

the magnetometer being placed in a magnetic field to be detected, the magnetic field being perpendicular to the direction of the current and producing a Lorentz Force perpendicular to the resonating means, the Lorentz Force causing deflection in the resonating means that can be detected.